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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/581,084	05/31/2006	Shinroku Kawasumi	740709-560	2060

22204 7590 10/17/2007  
NIXON PEABODY, LLP  
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WASHINGTON, DC 20004-2128

EXAMINER
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NGUYEN, KHANH TUAN

ART UNIT	PAPER NUMBER
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1796

MAIL DATE	DELIVERY MODE
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10/17/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/581,084	<b>Applicant(s)</b> KAWASUMI ET AL.	
	<b>Examiner</b> Khanh T. Nguyen	<b>Art Unit</b> 1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 31 May 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2,14 and 15 is/are rejected.
- 7) ☐ Claim(s) 13 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 May 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

1. The second inventor's name correction filed on 05/10/2007 is entered and acknowledged by the Examiner. Claims 1-15 are currently pending in the instant application.

#### ***Priority***

2. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

#### ***Information Disclosure Statement***

3. The information disclosure statement (IDS) submitted on 07/31/2006 and 04/26/2007 has been regarded by Examiner and made of record in the application file.

#### ***Drawings***

4. The drawing(s) submitted on 05/31/2005 has been regarded by Examiner and made of record in the application file.

#### ***Specification***

5. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract

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on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

6. The disclosure is objected to because of the following informalities: On page 6 (line 7) of the specification, the word "meals" is mistaking for the word --metals--.

Appropriate correction is required.

7. Claims 1-15 are objected to because the lines are crowded too closely together, making reading difficult. Substitute claims with lines one and one-half or double spaced on good quality paper are required. See 37 CFR 1.52(b).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of

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the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-4, 6-10 and 13-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawasumi et al. (U.S Pat. 4,309,457 hereinafter, "Kawasumi-457") in view of Kawasumi et al. (U.S Pat. 5,512,379 hereinafter, "Kawasumi-379").

With respect to claims 1-2 and 13-15, Kawasumi-457 teaches a process for producing a multilayer-coated composite powder comprises a step of preparing an aqueous solution which contains two salts (i.e. first metallic salt and a metallic powder for reducing the first metallic salt) of metals having oxidation-reduction potentials which differ from each other to produce double layered particles comprising the micro-particles of a metal of a relatively low oxidation-reduction potential coated with a metal of a relatively high oxidation-reduction potential (Col 3, lines 11-36 and Col. 3, lines 43-62); and bringing double layered particles into contact with a third metal salt and a reducing agent to form the second layer (Col. 4, lines 26-31). Kawasumi-457 teaches the metallic powder (i.e. core powder) consisting of Ag, Cu, and Sn (Col. 2, lines 64-65). Kawasumi-457 also teaches the metal coated layer is selected from Ni, Cu, Ag, Au, Pd, and Pt (Col 3, lines 14-18).

Kawasumi-457 failed to teach a protective colloid in the presence of the metal salt solution.

In the same field of endeavor, Kawasumi-379 teaches a double coating method wherein a palladium-coating layer over a thin precious metal-coated ceramic powder or a base metal powder with a palladium layer (Col. 3, lines 34-36 and Col. 3, lines 46-51). The coating method comprises a dispersion of precious metal salts in the presence of a water-soluble polymer (i.e. protective colloidal) (Col. 4, lines 33-39).

Kawasumi-457 and Kawasumi-379 references are combined because both references teach a method of multi-coating a precious metal particle with two or more layers of coated precious metals. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Kawasumi-457 double coating process by incorporating a protective colloidal into the metal salt dispersion taught by Kawasumi-379 because such a coating method comprising of a dispersion containing two metal salts having different oxidation-reduction potentials in the presence of a reducing agent and protective colloidal is expressly suggested by Kawasumi-457 view of Kawasumi-379 disclosure and therefore is an obvious method.

Regarding claims 3 and 4, Kawasumi-457 teaches a method of claim 1 or 2, in which the colloidal solution containing the double layered particles is first mixed with the reducing agent and then a solution of the third metal salt is added to the mixed solution (Col. 4, lines 26-31).

Regarding claim 6, Kawasumi-457 teaches a method of claim 1 or 2, in which the third metal (second coated layer metal) is palladium, palladium, platinum, silver, or nickel (Col. 3, lines 14-17).

Regarding claims 9 and 10, Kawasumi-379 teaches a metal micro-particle having mean particle size in the range of 0.1 to 1.0 micrometer (Abstract).

8. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kawasumi-457 (U.S. Pat. 4,309,457) in view of Kawasumi-379 (U.S. Pat. 5,512,379) as applied to the claims above, and further in view of Cheon et al. (U.S. Pat. 6,783,569, hereinafter "Cheon").

Kawasumi-457 and Kawasumi-379 are relied set forth above. With respect to claim 5, Kawasumi-457 teaches the core metallic powder consisting of silver, copper, or tin (Col. 2, lines 64-65). Kawasumi-457 further teaches the metal coated layers are selected from Ni, Cu, Ag, Au, Pd, and Pt (Col 3, lines 14-18). However, Kawasumi-457 and Kawasumi-379 did not disclose a method of claim 1 or 2, in which the metal having a relatively low oxidation-reduction potential is silver, copper, or tin, and the metal having a relatively high oxidation-reduction potential is palladium.

However, Cheon teaches the ionization tendency is associated with reduction-potential. The ionization tendency decreases in the order of Ni>Cu>~Ag>Pd. The position towards the left, the metal has a lower reduction potential and thereby a stronger oxidized tendency (Col. 4, lines 51-60).

Kawasumi-457, Kawasumi-379 and Cheon references are combined because both references teach a method of multi-coating a precious metal particle with two or more layers of coated precious metals. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to arranged the metal with a low oxidation-reduction potential as core particle and the coated layers with a higher oxidation-reduction potential as taught by Cheon in order to provide a more effective transmetalation (Col. 4, lines 64-67).

9. Claims 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawasumi-457 (U.S. Pat. 4,309,457) in view of Kawasumi-379 (U.S. Pat. 5,512,379) as applied to the claims above, and further in view of Kasai (English Machine Translated JP Pub. 08-176605).

Kawasumi-457 and Kawasumi-379 are relied set forth above. With respect to claims 11 and 12, Kawasumi-457 and Kawasumi-379 did not disclose the metal micropowder having normal particle diameter distribution  $O_g$  is not more than 2.0, more specifically not more than 1.9.

In the same field of endeavor, Kasai teaches a palladium coated silver powder having a particle size distribution in the range of 0.3-1.0 microns (Abstract and Examples 1-8).

Kawasumi-457, Kawasumi-379 and Kasai references are combined because the references teach a method of palladium coated silver powder. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have the

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desire to produce a uniform micropowder as taught by Kawasumi-457 in view of Kawasumi-379 with a particle size distribution of Kasai because such a method containing silver particle coated with multi-layers of precious metal is expressly suggested by Kawasumi-457 in view of Kawasumi-379 and further in of Kasai.

10. Claims 1-10, 14 and 15 are rejected under 35 U.S.C. 103(e) as being anticipated by Techmann et al. (U.S Pat. 4,711,814 hereinafter, "Techmann") in view of Cheon et al. (U.S Pat. 6,783,569).

Techmann teaches a method of producing a metal particle by electroless plating method (Col. 3, lines 12-19). The metal particle comprising of a core 12 made of nickel, coated by an inner coating of silver 13 and an outer coating of gold.

Techmann reference failed to teach the core of said metal powder comprising of silver, copper or tin and coated with an inner layer of palladium and an outer layer of palladium, palladium-silver alloy, platinum, silver or nickel according to the metals oxidization-reduction potential.

In the same field of endeavor, Cheon teaches a method for producing core-shell type metallic nanoparticles involving (i) a dispersion of a first metal (core) as nanoparticles in an organic solvent; (ii) providing a solution of metallic precursor containing a second metal (shell) in an organic solvent, in which the second metal has a higher reduction potential than the first; and (iii) combining the dispersion of (i) and (ii) to form a core-shell type nanoparticles (Col. 4, lines 3-14). Cheon further teaches the first metal (core) may be selected from copper, silver, nickel, gold, platinum, or palladium

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(Col. 4, lines 14-19). The first metal may comprise of a single element metal or a multi element metals of a core-shell type (Col. 5, lines 33-37). The second metal (Shell) may any metal that has a reduction potential higher than the first metal (Col. 4, lines 49-60). Cheon discloses a conventional method of preparing metal-coated metal (e.g. cobalt-palladium and iron-palladium alloy nanoparticles) prepared by reducing metallic ions to metals using a reducing agent such as hydrazine ( $N_2H_4$ ). (Col. 1, lines 54-62). Cheon also discloses examples of a double coated particles such as iron-coablt-nickel, chromium-iron-nickel, and manganese-iron-nickel to name a few. (Col. 4, lines 40-46).

Techmann and Cheon references are combined because both references teach a process of producing a metal powder coated by two different metal layers using electroless plating method. Therefore, it would have been obvious to one of ordinary skill in the art to produce a double coated metal particle at taught by Techmann with the lowest oxidization-reduction potential metal in the center and coated with tow higher oxidization-reduction potential metal as taught by Cheon to create the claimed double coated metal particle.

### ***Conclusion***

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Khanh T. Nguyen whose telephone number is (571) 272-8082. The examiner can normally be reached on Monday-Friday 8:00-5:00 EST PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski can be reached on (571) 272-1302. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



KTN  
10/05/2007

  
**Mark Kopec**  
**Primary Examiner**